Photo

Descriptions

Service Tool used to check error code and operational data

Applicable Models

- PUY-A12/18/24/30/36/42NHA
- PUZ-A12/18/24/30/36/42NHA

Specifications

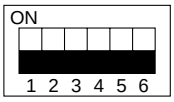
Power	5VDC (supplied from outdoor unit control board)
Temperature	-20 to 60℃, Humidity: 90%RH or less (no condensation)
External dimensions	69 (W) x 91 (H) x 27 (D) (mm), excluding lead wires
Weight	0.05kg

Outline and Dimensions

Unit : mm

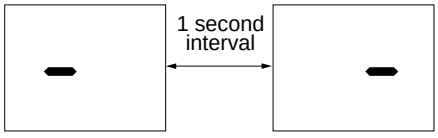
<Outdoor unit operation monitor function>
[When option part 'A-Control Service Tool(PAC-SK52ST)' is connected to outdoor controller board(CNM)]
Digital indicator LED1 displays 2 digit number or code to inform operation condition and the meaning of error code by controlling DIP SW2 on 'A-Control Service Tool'.

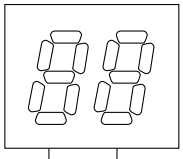
Operation indicator SW2 : Indicator change of self diagnosis

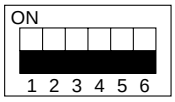
SW2 setting	Display detail	Explanation for display	Unit
			

<Digital indicator LED1 working details>
(Be sure the 1 to 6 in the SW2 are set to OFF.)

(1) Display when the power supply ON.
When the power supply ON, blinking displays by turns.
Wait for 4 minutes at the longest.
(2) When the display lights. (Normal operation)
①Operation mode display.



LED1  (Lighting)

SW2


(Initial setting)

The tens digit : Operation mode

Display	Operation Model
O	OFF / FAN
C	COOLING / DRY ※
H	HEATING
d	DEFROSTING

The ones digit : Relay output

Display	Warming-up Compressor	Compressor	4-way valve	Solenoid valve
0	—	—	—	—
1	—	—	—	ON
2	—	—	ON	—
3	—	—	ON	ON
4	—	ON	—	—
5	—	ON	—	ON
6	—	ON	ON	—
7	—	ON	ON	ON
8	ON	—	—	—
A	ON	—	ON	—

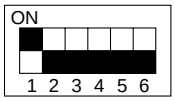
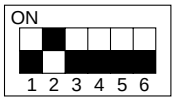
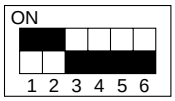
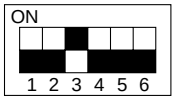
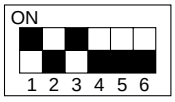
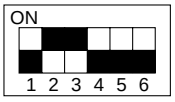
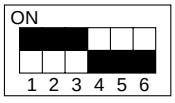
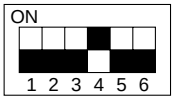
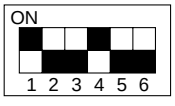
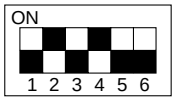
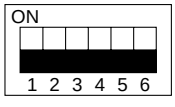
②Display during error postponement
Postponement code is displayed when compressor stops due to the work of protection device.
Postponement code is displayed while error is being postponed.

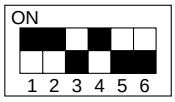
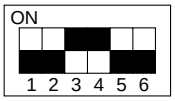
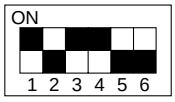
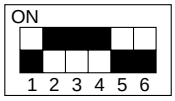
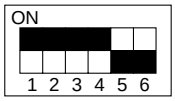
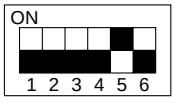
(3) When the display blinks
Inspection code is displayed when compressor stops due to the work of protection devices.

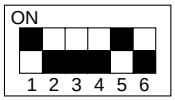
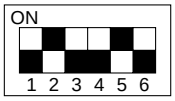
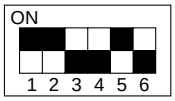
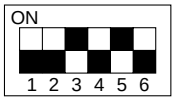
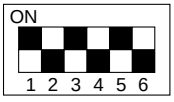
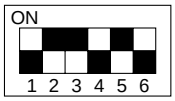
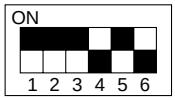
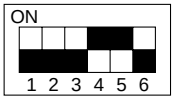
Display	Inspection unit
0	Outdoor unit
1	Indoor unit 1
2	Indoor unit 2
3	Indoor unit 3

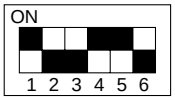
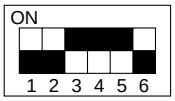
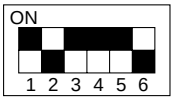
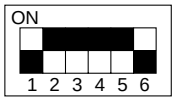
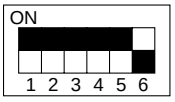
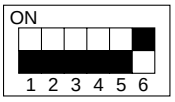
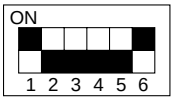
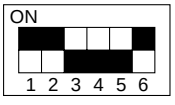
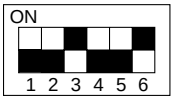
Display	Contents to be inspected (During operation)
U1	Abnormal high pressure (63H worked)
U2	Abnormal high discharging temperature, shortage of refrigerant
U3	Open/short circuit of discharging thermistor(TH4)
U4	Open/short of outdoor unit thermistors(TH3, TH6, TH7 and TH8)
U5	Abnormal temperature of heat sink
U6	Abnormality of power module
U8	Abnormality in outdoor fan motor.
UF	Compressor overcurrent interruption (When Comp. locked)
UH	Current sensor error
UL	Abnormal low pressure (63L worked)
UP	Compressor overcurrent interruption
P1~P8	Abnormality of indoor units
A0~A7	Communication error of high-prior signal (M-NET)

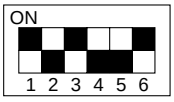
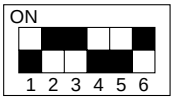
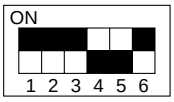
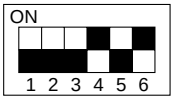
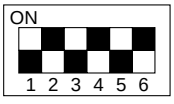
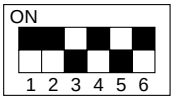
Display	Contents to be inspected (When power is turned on)
F3	63L connector(red) is open.
F5	63H connector(yellow) is open.
F9	2 connectors (63H/63L) are open.
E8	Indoor/outdoor communication error (Signal receiving error) (Outdoor unit)
E9	Indoor/outdoor communication error (Transmitting error) (Outdoor unit)
EA	Mis-wiring of indoor/outdoor unit connecting wire, excessive number of indoor units (4 units or more)
Eb	Mis-wiring of indoor/outdoor unit connecting wire(converse wiring or disconnection)
EC	Startup time over
E0~E7	Communication error except for outdoor unit

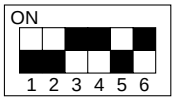
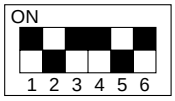
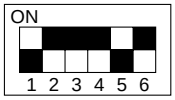
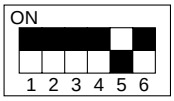
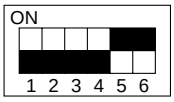
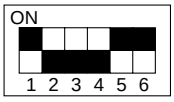
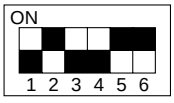
SW2 setting	Display detail	Explanation for display	Unit
	Pipe temperature / Liquid(TH3) – 40~194	– 40~194 (– 40~90℃) (When the coil thermistor detects 0˚F or below, "–" and temperature are displayed by turns.) (Example) When -10˚F; 0.5 secs. 0.5secs. 2 secs. -□ →10 →□□	˚F
	Discharge temperature (TH4) 37~327	37~327 (3~164℃) (When the discharge thermistor detects 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105˚F; 0.5 secs. 0.5secs. 2 secs. □1 →05 →□□	˚F
	Output step of outdoor FAN 0~10	0~10	Step
	The number of ON / OFF times of compressor 0~9999	0~9999 (When the number of times is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 42500 times (425 ×100 times); 0.5 secs. 0.5secs. 2 secs. □4 →25 →□□	100 times
	Compressor integrating operation times 0~9999	0~9999 (When it is 100 hours or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 2450 hours (245 ×10 hours); 0.5 secs. 0.5secs. 2 secs. □2 →45 →□□	10 hours
	Compressor operating current. 0~50	0~50 ※Omit the figures after the decimal fractions.	A
	Compressor operating frequency 0~225	0~255 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 125Hz; 0.5 secs. 0.5secs. 2 secs. □1 →25 →□□	Hz
	LEV-A opening pulse 0~480	0~480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns. (Example) When 150 pulse; 0.5 secs. 0.5secs. 2 secs. □1 →50 →□□	Pulse
	Error postponement code history (1) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement "00" is displayed in case of no postponement.	Code display
	Operation mode on error occurring	Operation mode of when operation stops due to error is displayed by setting SW2 like below. (SW2) 	Code display

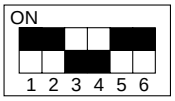
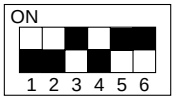
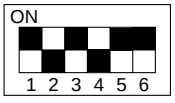
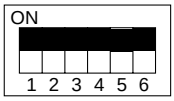
SW2 setting	Display detail	Explanation for display	Unit
	Pipe temperature / Liquid(TH3) on error occurring – 40~194	– 40~194 (– 40~90℃) (When the coil thermistor detects 0˚F or below, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 secs. 0.5secs. 2 secs. –□ →15 →□□	˚F
	Compressor temperature (TH4) or discharge temperature (TH4) on error occurring 37~327	37~327 (3~164℃) (When the temperature is 100˚F or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 130˚F; 0.5 secs. 0.5secs. 2 secs. □1 →30 →□□	˚F
	Compressor operating current on error occurring 0~20	0~20	A
	Error code history (1) (latest) Alternate display of abnormal unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	Error code history (2) Alternate display of error unit number and code	When no error history, " 0 " and "– –" are displayed by turns.	Code display
	Thermostat ON time 0~999	0~999 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 245 minutes; 0.5 secs. 0.5secs. 2 secs. □2 →45 →□□	Minute
	Test run elapsed time 0~120	0~120 (When it is 100 minutes or more, the hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 105 minutes; 0.5 secs. 0.5secs. 2 secs. □1 →05 →□□	Minute

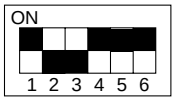
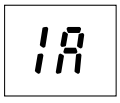
<table>
<tr><th>SW2 setting</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr><td> 
</td><td>The number of connected indoor units</td><td>0~3
(The number of connected indoor units are displayed.)</td><td>Unit</td></tr>
<tr><td> 
</td><td>Capacity setting display</td><td>Displayed as an outdoor capacity code.
<table>
<tr><th>Capacity</th><th>Code</th><th>Capacity</th><th>Code</th></tr>
<tr><td>A12N</td><td>9</td><td>A36N</td><td>20</td></tr>
<tr><td>A18N</td><td>10</td><td>A42N</td><td>25</td></tr>
<tr><td>A24N</td><td>11</td><td></td><td></td></tr>
<tr><td>A30N</td><td>14</td><td></td><td></td></tr>
</table></td><td>Code display</td></tr>
<tr><td> 
</td><td>Outdoor unit setting information</td><td>• The tens digit (Total display for applied setting)
<table>
<tr><th>Setting details</th><th>Display details</th></tr>
<tr><td>H·P / Cooling only</td><td>0 : H·P 1 : Cooling only</td></tr>
<tr><td>Single phase / Three phase</td><td>0 : Single phase 2 : Three phase</td></tr>
</table>
• The ones digit
<table>
<tr><th>Setting details</th><th>Display details</th></tr>
<tr><td>Defrosting switch</td><td>0 : Normal 1 : For high humidity</td></tr>
</table>
(Example) When heat pump,three phase and defrosting (normal) are set up, “20” is displayed.</td><td>Code display</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature / Liquid (TH2(1))
Indoor 1
– 38~190</td><td>– 38~190 (– 39~88℃)
(When the temperature is 0ºF or less, “–” and temperature are displayed by turns.)</td><td>˚F</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature / Cond. / Eva. (TH5(1))
Indoor 1
– 38~190</td><td>– 38~190 (– 39~88℃)
(When the temperature is 0˚F or less, “–” and temperature are displayed by turns.)</td><td>˚F</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature / Liquid (TH2(2))
Indoor 2
– 38~190</td><td>– 38~190 (– 39~88℃)
(When the temperature is 0˚F or less, “–” and temperature are displayed by turns.)</td><td>˚F</td></tr>
<tr><td> 
</td><td>Indoor pipe temperature / Cond. / Eva. (TH5(2))
Indoor 2
– 38~190</td><td>– 38~190 (– 39~88℃)
(When the temperature is 0˚F or less, “–” and temperature are displayed by turns.)</td><td>˚F</td></tr>
<tr><td> 
</td><td>Indoor room temperature (TH1)
46~102</td><td>46~102 (8~39℃)</td><td>˚F</td></tr>
</table>

SW2 setting	Display detail	Explanation for display	Unit
	Indoor setting temperature 62~86	62~86 (17~30℃)	˚F
	Outdoor pipe temperature / Cond./ Eva. (TH6) -38~190	-38~190 (-39~88℃) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.)	˚F
	Outdoor outside temperature (TH7) -38~190	-38~190 (-39~88℃) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.)	˚F
	Outdoor heat sink temperature (TH8) -40~327	-40~327 (-40~164℃) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (When the thermistor detects 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.)	˚F
	Discharge super heat. SHd 0~327 [Cooling = TH4-TH6 Heating = TH4-TH5]	0~327 (0~182degC) (When the temperature is 100degF or more, hundreds digit, tens digit and ones digit are displayed by turns.)	degF
	Sub cool. SC 0~234 [Cooling = TH6-TH3 Heating = TH5-TH4]	0~234 (0~130degC) (When the temperature is 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.)	degF
	Input current of outdoor unit	0~500 (When it is 100 or more, hundreds digit, tens digit and ones digit are displayed by turns.)	0.1 A
	Targeted operation frequency 0~255	0~255 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.)	Hz
	DC bus voltage 180~370	180~370 (When it is 100V or more, hundreds digit, tens digit and ones digit are displayed by turns.)	V

SW2 setting	Display detail	Explanation for display	Unit
	Capacity save 0~100 When air conditioner is connected to M-NET and capacity save mode is demanded, “0”~”100” is displayed. [When there is no setting of capacity save “100” is displayed.]	0~100 (When the capacity is 100% hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 100%; 0.5 secs. 0.5secs. 2 secs. □1 →00 →□□	%
	Error postponement code history (2) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement “00” is displayed in case of no postponement.	Code display
	Error postponement code history (3) of outdoor unit	Postponement code display Blinking: During postponement Lighting: Cancellation of postponement “00” is displayed in case of no postponement.	Code display
	Error code history (3) (Oldest) Alternate display of abnormal unit number and code.	When no error history, “0” and “– –“ are displayed by turns.	Code display
	Error thermistor display [When there is no error thermistor, “–“ is displayed.]	3: Outdoor pipe temperature /Liquid (TH3) 6: Outdoor pipe temperature /Cond./Eva. (TH6) 7: Outdoor outside temperature (TH7) 8: Outdoor radiator panel (TH8)	Code display
	Operation frequency on error occurring 0~255	0~255 (When it is 100Hz or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 125Hz; 0.5 secs. 0.5secs. 2 secs. □1 →25 →□□	Hz
	Fan step on error occurring 0~10	0~10	Step

SW2 setting	Display detail	Explanation for display	Unit
	LEV-A opening pulse on error occurring 0~480	0~480 (When it is 100 pulse or more, hundreds digit, tens digit and ones digit are displayed by turns.) (Example) When 130 pulse; 0.5 secs. 0.5secs. 2 secs. □1 →30 →□□	Pulse
	Indoor room temperature (TH1) on error occurring 46~102	46~102 (8~39°C)	˚F
	Indoor pipe temperature / Liquid (TH2) on error occurring -38~190	-38~190 (-39~88°C) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 secs. 0.5secs. 2 secs. -□ →15 →□□	˚F
	Indoor pipe temperature / Cond./ Eva. (TH5) on error occurring -38~190	-38~190 (-39~88°C) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 secs. 0.5secs. 2 secs. -□ →15 →□□	˚F
	Outdoor pipe temperature / Cond./ Eva. (TH6) on error occurring -38~190	-38~190 (-39~88°C) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 secs. 0.5secs. 2 secs. -□ →15 →□□	˚F
	Outdoor outside temperature (TH7) on error occurring -38~190	-38~190 (-39~88°C) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (Example) When –15˚F; 0.5 secs. 0.5secs. 2 secs. -□ →15 →□□	˚F
	Outdoor heat sink temperature (TH8) on error occurring -40~327	-40~327 (-40~164°C) (When the temperature is 0˚F or less, "–" and temperature are displayed by turns.) (When the temperature is 100˚F or more, hundreds digit, tens digit and ones digit are displayed by turns.)	˚F

<table>
<tr><th>SW2 setting</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr>
<td> 
</td>
<td>Discharge super heat on error occurring
SHd
0~327
[Cooling = TH4-TH6
Heating = TH4-TH5]</td>
<td>0~327 (0~182degC)
(When the temperature is 100degF or more, hundreds digit, tens digit and ones digit are displayed by turns.)
(Example) When 150degF;
0.5 secs. 0.5secs. 2 secs.
□1 →50 →□□</td>
<td>degF</td>
</tr>
<tr>
<td> 
</td>
<td>Sub cool on error occurring. SC
0~234
[Cooling = TH6-TH3
Heating = TH5-TH2]</td>
<td>0~234 (0~130degC)
(When the temperature is 100degF or more, hundreds digit, tens digit and ones digit are displayed by turns.)
(Example) When 115degF;
0.5 secs. 0.5secs. 2 secs.
□1 →15 →□□</td>
<td>degF</td>
</tr>
<tr>
<td> 
</td>
<td>Thermostat-on time until error stops
0~999</td>
<td>0~999
(When it is 100 minutes or more, hundreds digit, tens digit and ones digit are displayed by turns.)
(Example) When 415 minutes;
0.5 secs. 0.5secs. 2 secs.
□4 →15 →□□</td>
<td>Minute</td>
</tr>
<tr>
<td> 
</td>
<td>U9 Error status during the Error postponement period</td>
<td>
<table>
<tr><th>Description</th><th>Detection point</th><th>Display</th></tr>
<tr><td>Normal</td><td>—</td><td>00</td></tr>
<tr><td>Overvoltage error</td><td>Power circuit board</td><td>01</td></tr>
<tr><td>Undervoltage error</td><td>Controller circuit board</td><td>02</td></tr>
<tr><td>Input current sensor error.
L1 or L2-phase open error.</td><td>Controller circuit board</td><td>04</td></tr>
<tr><td>Abnormal power synchronous signal</td><td>Power circuit board</td><td>08</td></tr>
<tr><td>PFC error (A12, 18, 24NHA)
(Overvoltage / Undervoltage / Overcurrent)</td><td>Power circuit board</td><td>10</td></tr>
<tr><td>PFC/ ACTM error
Undervoltage</td><td>Check CNAF wiring.
Defective ACTM/ P.B.</td><td>20</td></tr>
</table>
※ Display examples for multiple errors:
Overvoltage (01) + Undervoltage (02) = 03
Undervoltage (02) + Power-sync signal error (08) = 0A
L_1 phase open error (04) + PFC error (10) = 14
</td>
<td>Code display</td>
</tr>
</table>

<table>
<tr><th>SW2 setting</th><th>Display detail</th><th>Explanation for display</th><th>Unit</th></tr>
<tr>
<td> 
</td>
<td>Controlling status of compressor operating frequency</td>
<td>The following code will be a help to know the operating status of unit.
•The tens digit
<table>
<tr><th>Display</th><th>Compressor operating frequency control</th></tr>
<tr><td>1</td><td>Primary current control</td></tr>
<tr><td>2</td><td>Secondary current control</td></tr>
</table>
•The ones digit (In this digit, the total number of activated control is displayed.)
<table>
<tr><th>Display</th><th>Compressor operating frequency control</th></tr>
<tr><td>1</td><td>Preventive control for excessive temperature rise of discharge temperature</td></tr>
<tr><td>2</td><td>Preventive control for excessive temperature rise of condensing temperature</td></tr>
<tr><td>4</td><td>Frosting preventing control</td></tr>
<tr><td>8</td><td>Preventive control for excessive temperature rise of radiator panel</td></tr>
</table>
(Example)
The following controls are activated.
• Primary current control
• Preventive control for excessive temperature rise of condensing temperature
• Preventive control for excessive temperature rise of radiator panel
LED
  </td>
<td>Code display</td>
</tr>
</table>